

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

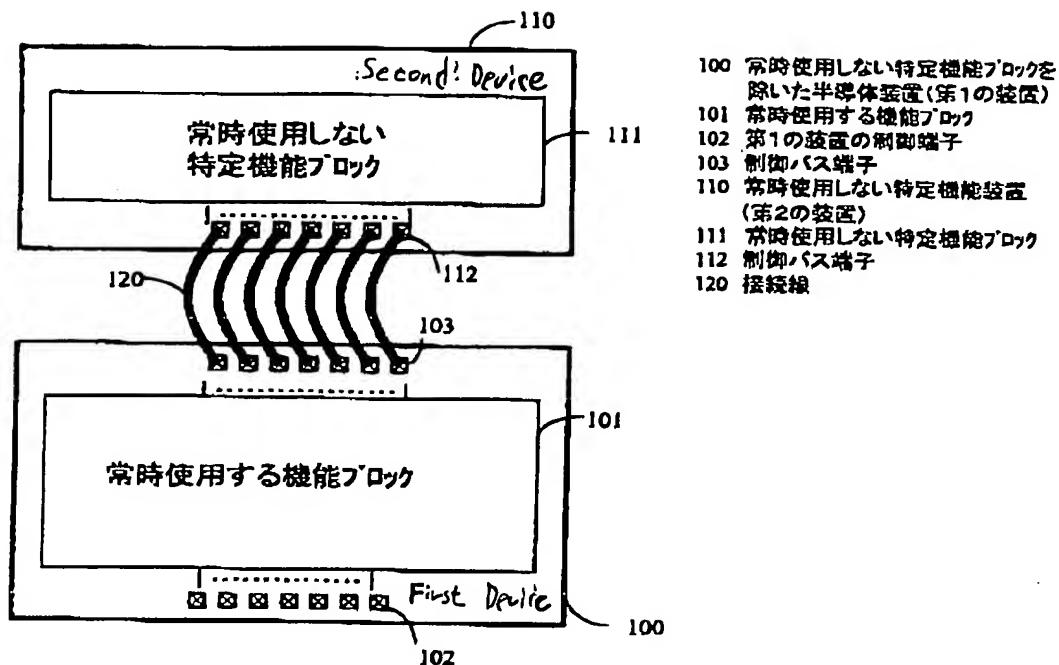
Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

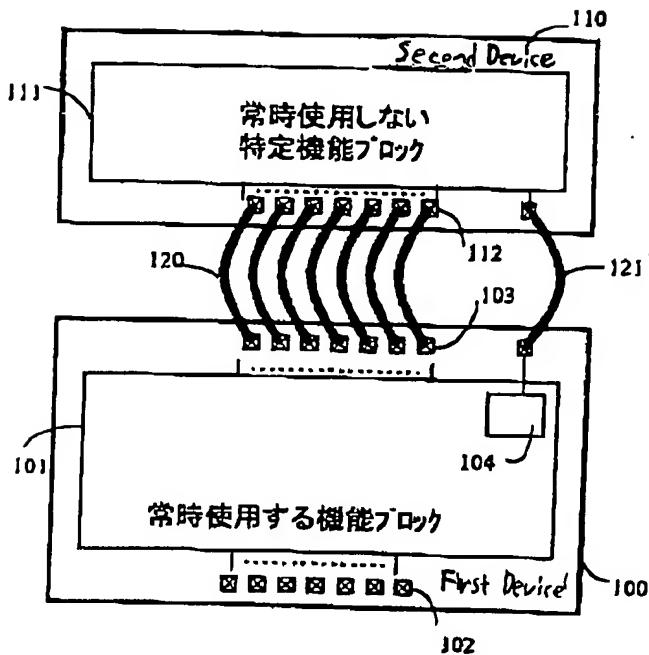
Fig. 1



- 100 常時使用しない特定機能ブロックを除いた半導体装置(第1の装置)
- 101 常時使用する機能ブロック
- 102 第1の装置の制御端子
- 103 制御バス端子
- 110 常時使用しない特定機能装置(第2の装置)
- 111 常時使用しない特定機能ブロック
- 112 制御バス端子
- 120 接続線

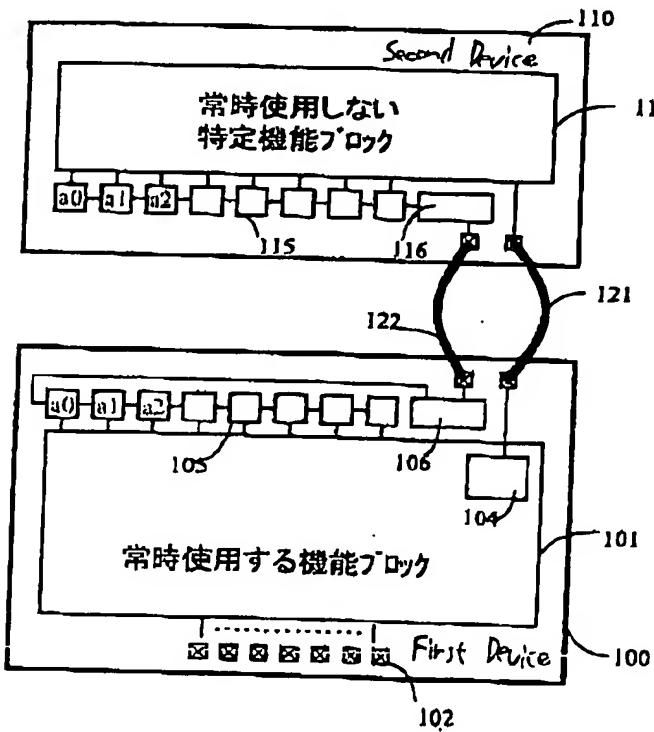
100: SEMICONDUCTOR DEVICE (FIRST DEVICE) EXCLUDING
 NON-ALWAYS-USED PARTICULAR FUNCTION BLOCK
 101: ALWAYS-USED FUNCTION BLOCK
 102: CONTROL TERMINAL OF FIRST DEVICE
 103: CONTROL BUS TERMINAL
 110: DEVICE (SECOND DEVICE) HAVING NON-ALWAYS-USED PARTICULAR
 FUNCTION
 111: NON-ALWAYS-USED PARTICULAR FUNCTION BLOCK
 112: CONTROL BUS TERMINAL
 120: CONNECTION LINE

Fig. 2



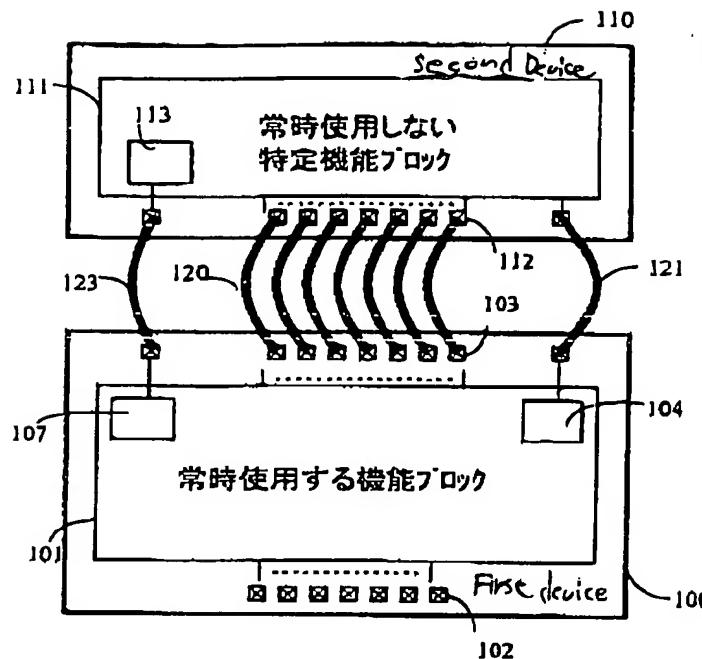
- 100: SEMICONDUCTOR DEVICE (FIRST DEVICE) EXCLUDING NON-ALWAYS-USED PARTICULAR FUNCTION BLOCK
- 101: ALWAYS-USED FUNCTION BLOCK
- 102: CONTROL TERMINAL OF FIRST DEVICE
- 103: CONTROL BUS TERMINAL
- 104: SECOND DEVICE CONTROL START SIGNAL GENERATION CIR.
- 110: DEVICE (SECOND DEVICE) HAVING NON-ALWAYS-USED PARTICULAR FUNCTION
- 111: NON-ALWAYS-USED PARTICULAR FUNCTION BLOCK
- 112: CONTROL BUS TERMINAL
- 120: CONNECTION LINE
- 121: SECOND DEVICE CONTROL START SIGNAL LINE

Fig. 3



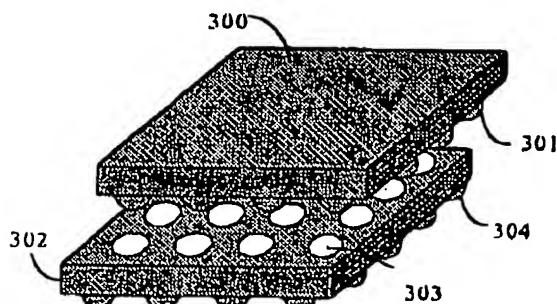
- 100: SEMICONDUCTOR DEVICE (FIRST DEVICE) EXCLUDING NON-ALWAYS-USED PARTICULAR FUNCTION BLOCK
- 101: ALWAYS-USED FUNCTION BLOCK
- 102: CONTROL TERMINAL OF FIRST DEVICE
- 104: SECOND DEVICE CONTROL START SIGNAL GENERATION CIR.
- 105: CONTROL SIGNAL REGISTER GROUP OF FIRST DEVICE
- 106: SERIAL I/F OF FIRST DEVICE
- 110: DEVICE (SECOND DEVICE) HAVING NON-ALWAYS-USED PARTICULAR FUNCTION
- 111: NON-ALWAYS-USED PARTICULAR FUNCTION BLOCK
- 115: CONTROL SIGNAL REGISTER GROUP OF SECOND DEVICE
- 116: SERIAL I/F OF SECOND DEVICE
- 121: SECOND DEVICE CONTROL START SIGNAL LINE
- 122: SERIAL CONTROL SIGNAL LINE

Fig. 4



- 100: SEMICONDUCTOR DEVICE (FIRST DEVICE) EXCLUDING NON-ALWAYS-USED PARTICULAR FUNCTION BLOCK
- 101: ALWAYS-USED FUNCTION BLOCK
- 102: CONTROL TERMINAL OF FIRST DEVICE
- 103: CONTROL BUS TERMINAL
- 104: SECOND DEVICE CONTROL START SIGNAL GENERATION CIR.
- 107: SECOND DEVICE DETECTION CIR.
- 110: DEVICE (SECOND DEVICE) HAVING NON-ALWAYS-USED PARTICULAR FUNCTION
- 111: NON-ALWAYS-USED PARTICULAR FUNCTION BLOCK
- 112: CONTROL BUS TERMINAL
- 113: IDENTIFICATION SIGNAL GENERATION CIR.
- 120: CONNECTION LINE
- 121: SECOND DEVICE CONTROL START SIGNAL LINE
- 123: SECOND DEVICE IDENTIFICATION SIGNAL LINE

Fig. 5



- 300: PACKAGE INCORPORATING SECOND DEVICE
- 301: BALL GRID ARRAY ELECTRODES OF PACKAGE INCORPORATING SECOND DEVICE (CONTROL BUS TERMINALS OF SECOND DEVICE)
- 302: PACKAGE INCORPORATING FIRST DEVICE
- 303: PACKAGE CONTACT SURFACES OF PACKAGE INCORPORATING FIRST DEVICE (CONTROL BUS TERMINALS OF FIRST DEVICE)
- 304: BALL GRID ARRAY ELECTRODES OF PACKAGE INCORPORATING FIRST DEVICE (CONTROL TERMINALS OF FIRST DEVICE)

Fig. 6

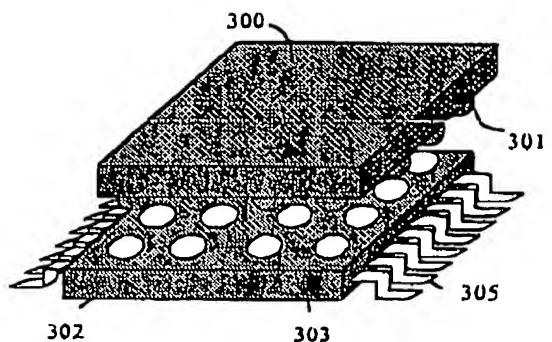
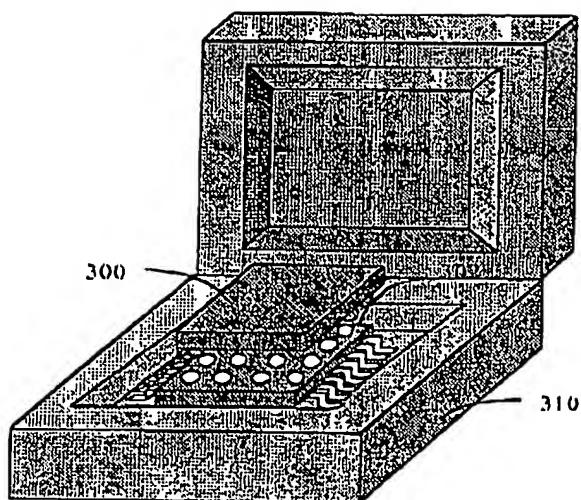


Fig. 7



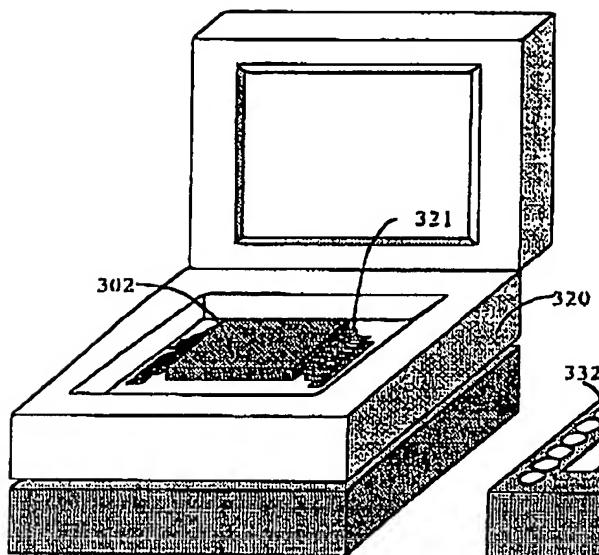
300: PACKAGE INCORPORATING SECOND DEVICE

302: PACKAGE INCORPORATING FIRST DEVICE

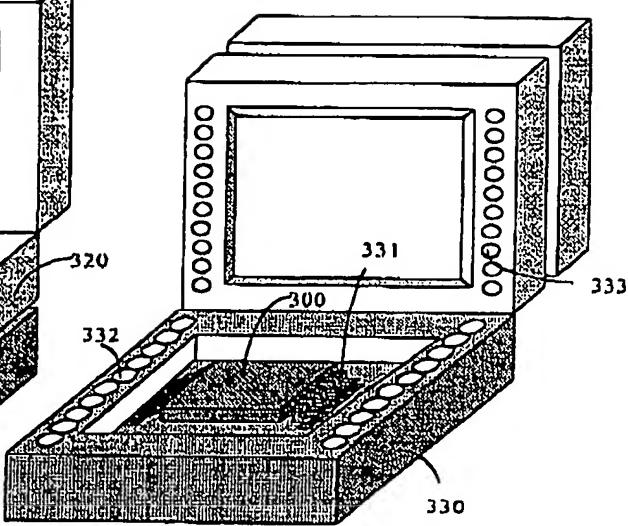
310: SOCKET FOR CONNECTING TWO PACKAGES

Fig. 8

(a)

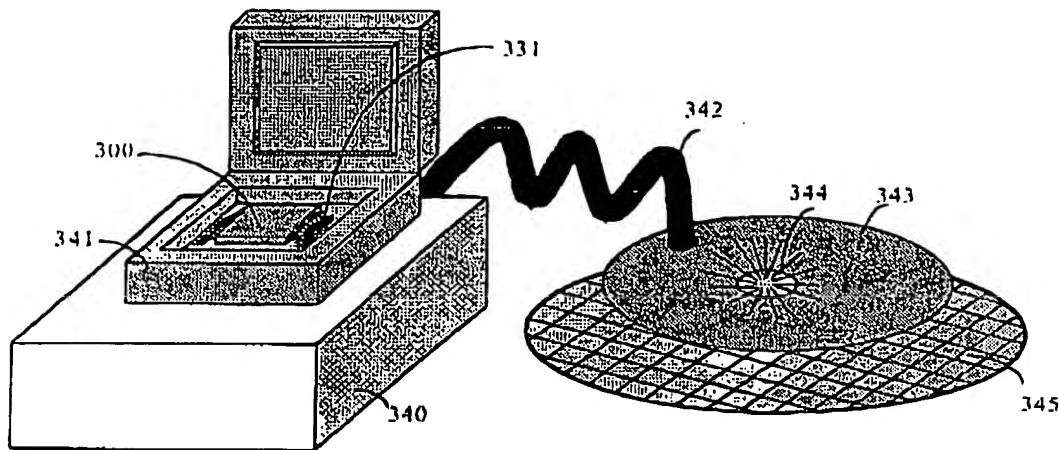


(b)



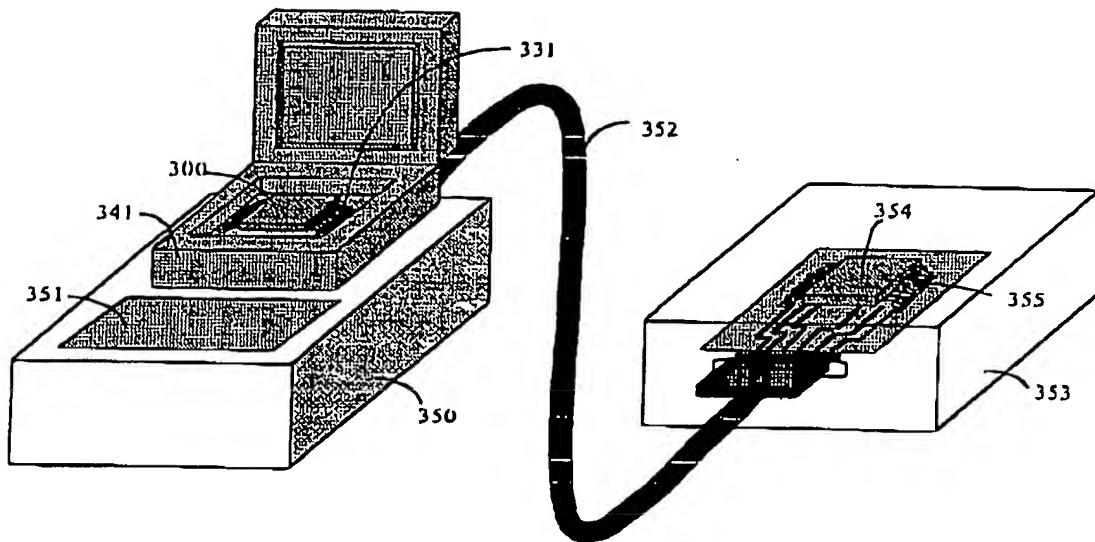
300: PACKAGE INCORPORATING SECOND DEVICE
302: PACKAGE INCORPORATING FIRST DEVICE
320: FIRST PACKAGE INSERTION PORTION OF 2-STAGE CONNECTION SOCKET
321: ELECTRODES OF PACKAGE INCORPORATING FIRST DEVICE (CONTROL BUS TERMINALS AND CONTROL TERMINALS OF FIRST DEVICE)
330: SECOND PACKAGE INSERTION PORTION OF 2-STAGE CONNECTION SOCKET
331: ELECTRODES OF PACKAGE INCORPORATING SECOND DEVICE (CONTROL BUS TERMINALS OF SECOND DEVICE)
332: CONNECTION SIGNAL ELECTRODES CONNECTED TO SECOND PACKAGE (CONTROL BUS TERMINALS OF SECOND DEVICE)
333: CONNECTION SIGNAL ELECTRODES CONNECTED TO FIRST PACKAGE (CONTROL BUS TERMINALS OF SECOND DEVICE)

Fig. 9



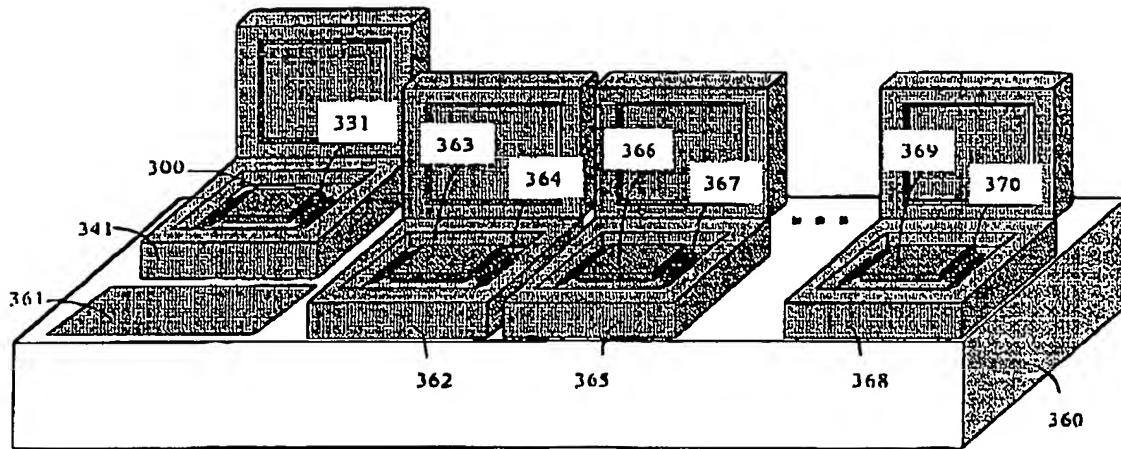
- 300: PACKAGE INCORPORATING SECOND DEVICE
- 331: ELECTRODES OF PACKAGE INCORPORATING SECOND DEVICE (CONTROL BUS TERMINALS OF SECOND DEVICE)
- 340: APPARATUS (E.G., GENERAL-PURPOSE TESTING APPARATUS) FOR SETTING FUNCTION IN FIRST DEVICE
- 341: SOCKET IN WHICH SECOND PACKAGE IS INSERTED
- 342: CONNECTION LINE (FOR CONTROL BUS TERMINALS SIGNALS FROM FIRST DEVICE AND CONTROL TERMINAL SIGNALS FROM SECOND DEVICE)
- 343: PROBE CARD
- 344: PROBE ELECTRODES (CONTROL BUS TERMINALS FOR FIRST DEVICE AND CONTROL TERMINALS FOR SECOND DEVICE)
- 345: WAFER ON WHICH FIRST DEVICES ARE FORMED

Fig. 10



300: PACKAGE INCORPORATING SECOND DEVICE
331: ELECTRODES OF PACKAGE INCORPORATING SECOND DEVICE (CONTROL BUS TERMINALS OF SECOND DEVICE)
341: SOCKET IN WHICH SECOND PACKAGE IS INSERTED
350: APPARATUS (E.G., GENERAL-PURPOSE REWRITING APPARATUS) FOR SETTING FUNCTIONS IN FIRST DEVICE
351: MANIPULATION SURFACE OF FUNCTION SETTING APPARATUS
352: CONNECTION LINE (FOR CONTROL BUS TERMINALS SIGNALS FROM FIRST DEVICE AND CONTROL TERMINAL SIGNALS FROM SECOND DEVICE)
353: APPARATUS (E.G., CELLULAR PHONE) INCORPORATING FIRST DEVICE
354: PACKAGE INCORPORATING FIRST DEVICE
355: ELECTRODES OF PACKAGE INCORPORATING FIRST DEVICE (CONTROL BUS TERMINALS FOR FIRST DEVICE AND CONTROL TERMINALS FOR SECOND DEVICE)

Fig. 11



300: PACKAGE INCORPORATING SECOND DEVICE

331: ELECTRODES OF PACKAGE INCORPORATING SECOND DEVICE (CONTROL
BUS TERMINALS OF SECOND DEVICE)

341: SOCKET IN WHICH SECOND PACKAGE IS INSERTED

360: APPARATUS (E.G., GENERAL-PURPOSE REWRITING APPARATUS) FOR
SETTING FUNCTIONS IN FIRST DEVICE

361: MANIPULATION SURFACE OF FUNCTION SETTING APPARATUS

362: SOCKET IN WHICH FIRST FIRST PACKET IS INSERTED

363: PACKAGE INCORPORATING FIRST FIRST DEVICE

364: ELECTRODES OF PACKAGE INCORPORATING FIRST FIRST DEVICE
(CONTROL BUS TERMINALS AND CONTROL TERMINALS OF FIRST DEVICE)

365: SOCKET IN WHICH SECOND FIRST PACKET IS INSERTED

366: PACKAGE INCORPORATING SECOND FIRST DEVICE

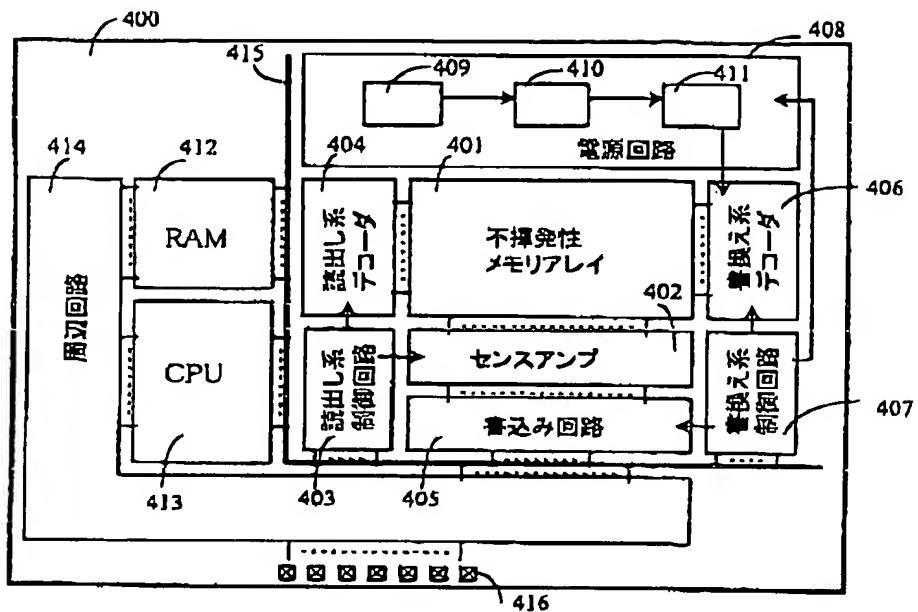
367: ELECTRODES OF PACKAGE INCORPORATING SECOND FIRST DEVICE
(CONTROL BUS TERMINALS AND CONTROL TERMINALS OF FIRST DEVICE)

368: SOCKET IN WHICH NTH FIRST PACKET IS INSERTED

366: PACKAGE INCORPORATING NTH FIRST DEVICE

367: ELECTRODES OF PACKAGE INCORPORATING NTH FIRST DEVICE (CONTROL
BUS TERMINALS AND CONTROL TERMINALS OF FIRST DEVICE)

Fig.12



- 400: NONVOLATILE-MEMORY-INCORPORATED MICROCOMPUTER
- 401: NONVOLATILE MEMORY CELL ARRAY
- 402: SENSE AMPLIFIER CIR.
- 403: READING CONTROL CIR.
- 404: READING DECODER
- 405: WRITING CIR. (PAGE LATCH)
- 406: REWRITING DECODER
- 407: REWRITING CONTROL CIR.
- 408: POWER CIR.
- 409: REFERENCE VOLTAGE TRIMMING CIR.
- 410: REFERENCE VOLTAGE GENERATION CIR.
- 411: REWRITING VOLTAGE GENERATION CIR.
- 414: PERIPHERAL CIRCUITS
- 415: CONTROL BUS
- 416: MICROCOMPUTER CONTROL TERMINAL

Fig.13

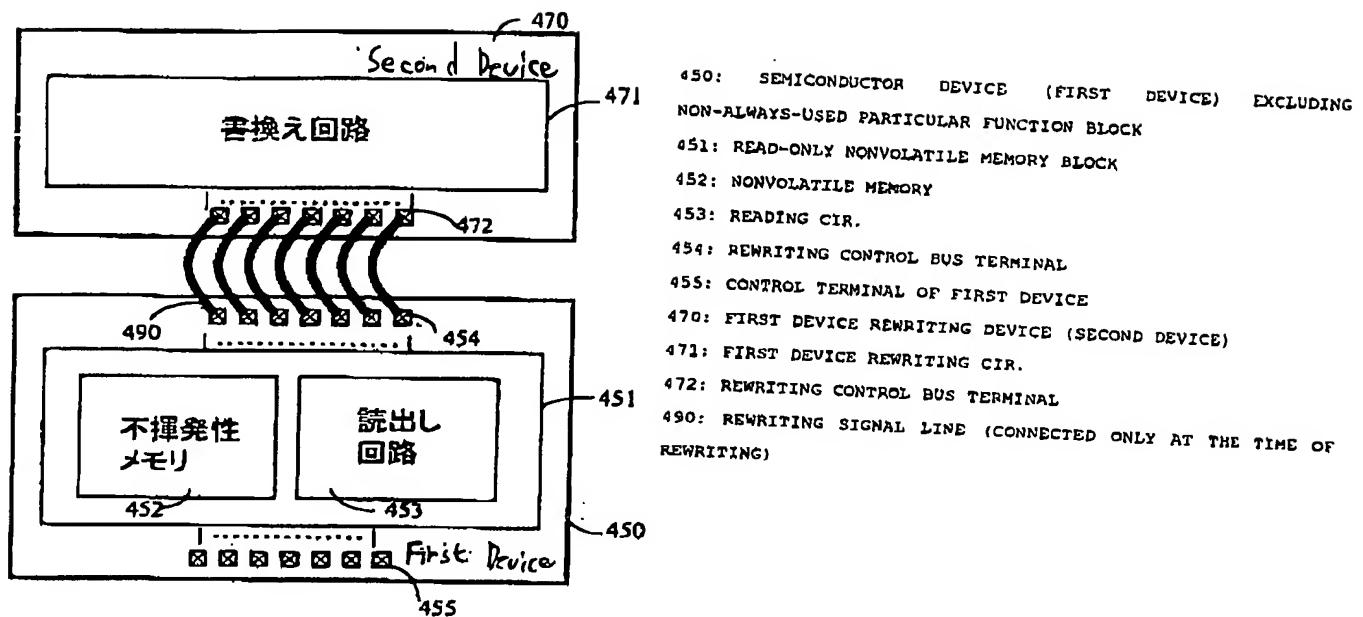


Fig. 14

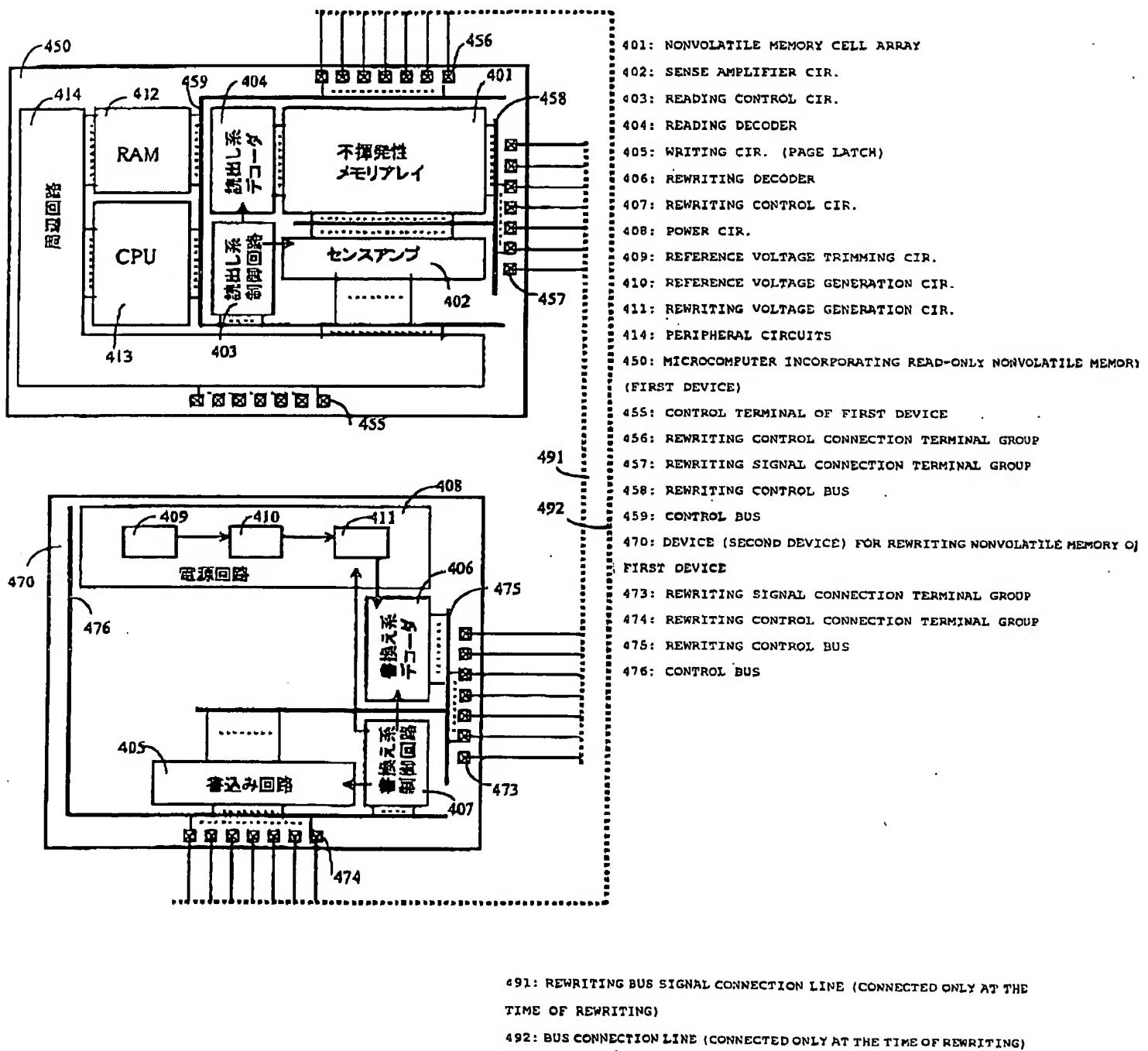
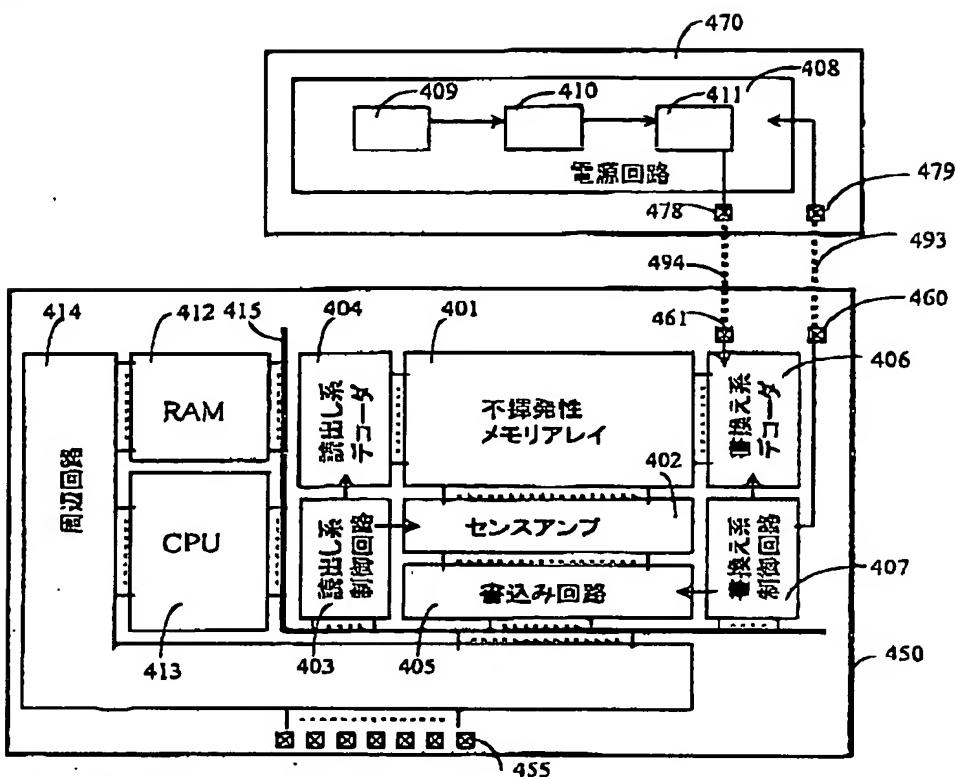


Fig.15



401: NONVOLATILE MEMORY CELL ARRAY
 402: SENSE AMPLIFIER CIR.
 403: READING CONTROL CIR.
 404: READING DECODER
 405: WRITING CIR. (PAGE LATCH)
 406: REWRITING DECODER
 407: REWRITING CONTROL CIR.
 408: POWER CIR.
 409: REFERENCE VOLTAGE TRIMMING CIR.
 410: REFERENCE VOLTAGE GENERATION CIR.
 411: REWRITING VOLTAGE GENERATION CIR.
 412: PERIPHERAL CIRCUITS
 413: CONTROL BUS
 450: MICROCOMPUTER INCORPORATING READ-ONLY NONVOLATILE MEMORY
 (FIRST DEVICE)
 455: CONTROL TERMINAL OF FIRST DEVICE
 460: REWRITING CONTROL TERMINAL
 461: REWRITING POWER CONNECTION TERMINAL
 470: POWER DEVICE (SECOND DEVICE) FOR REWRITING NONVOLATILE MEMORY
 OF FIRST DEVICE
 478: REWRITING POWER CONNECTION TERMINAL
 479: REWRITING CONTROL TERMINAL
 493: REWRITING CONTROL CONNECTION LINE (CONNECTED ONLY AT THE
 TIME OF REWRITING)
 494: REWRITING POWER CONNECTION LINE (CONNECTED ONLY AT THE TIME
 OF REWRITING)

Fig. 16

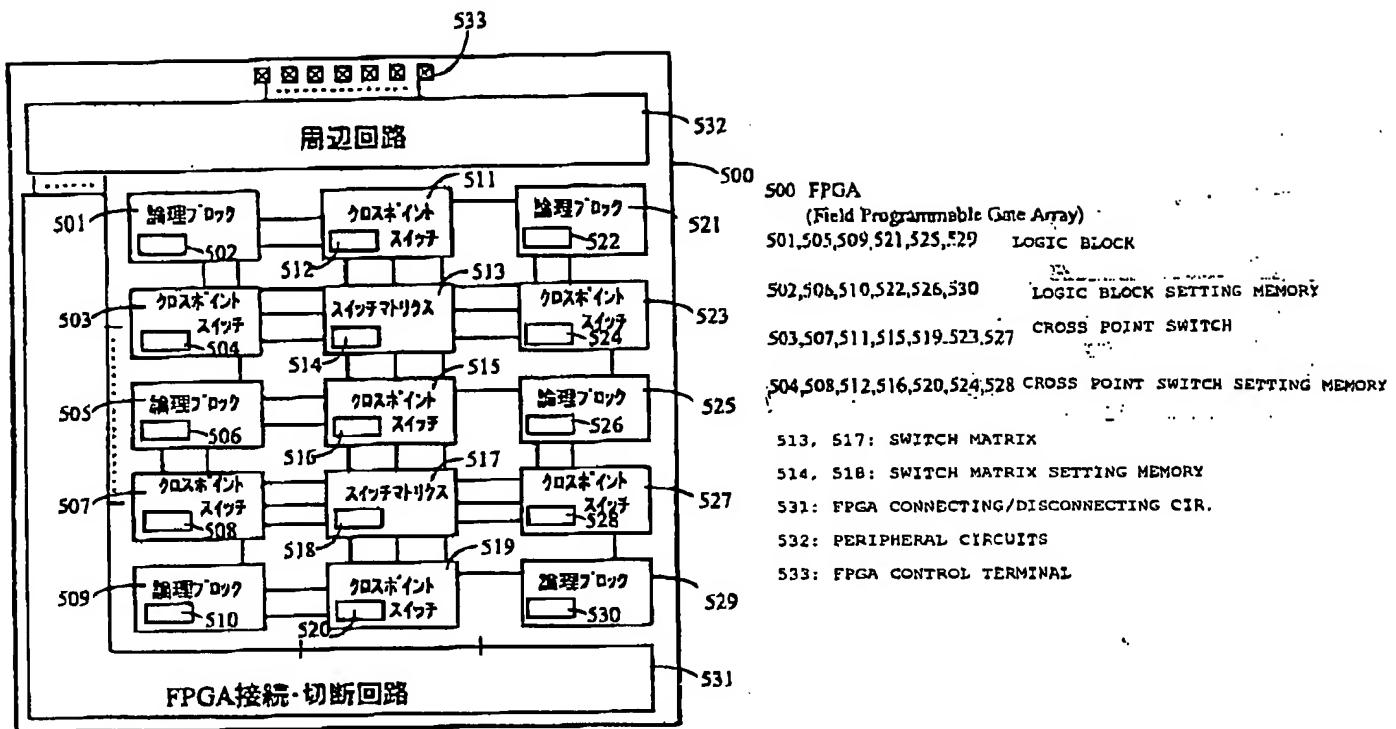


Fig. 17

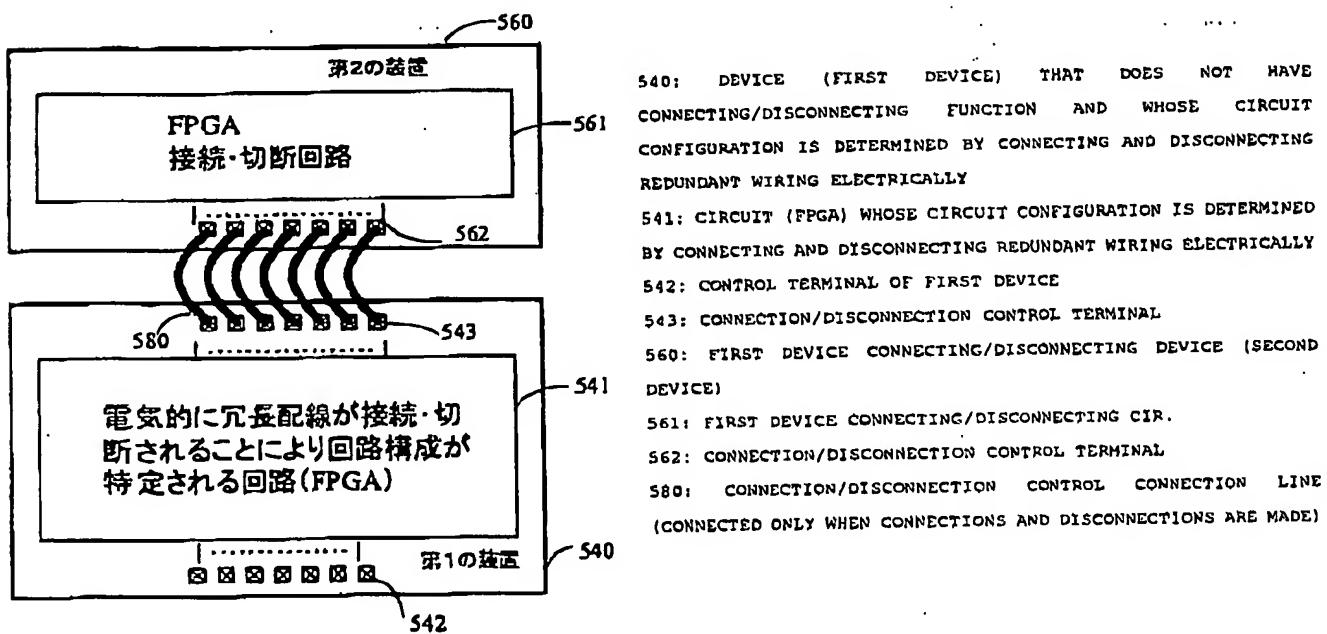
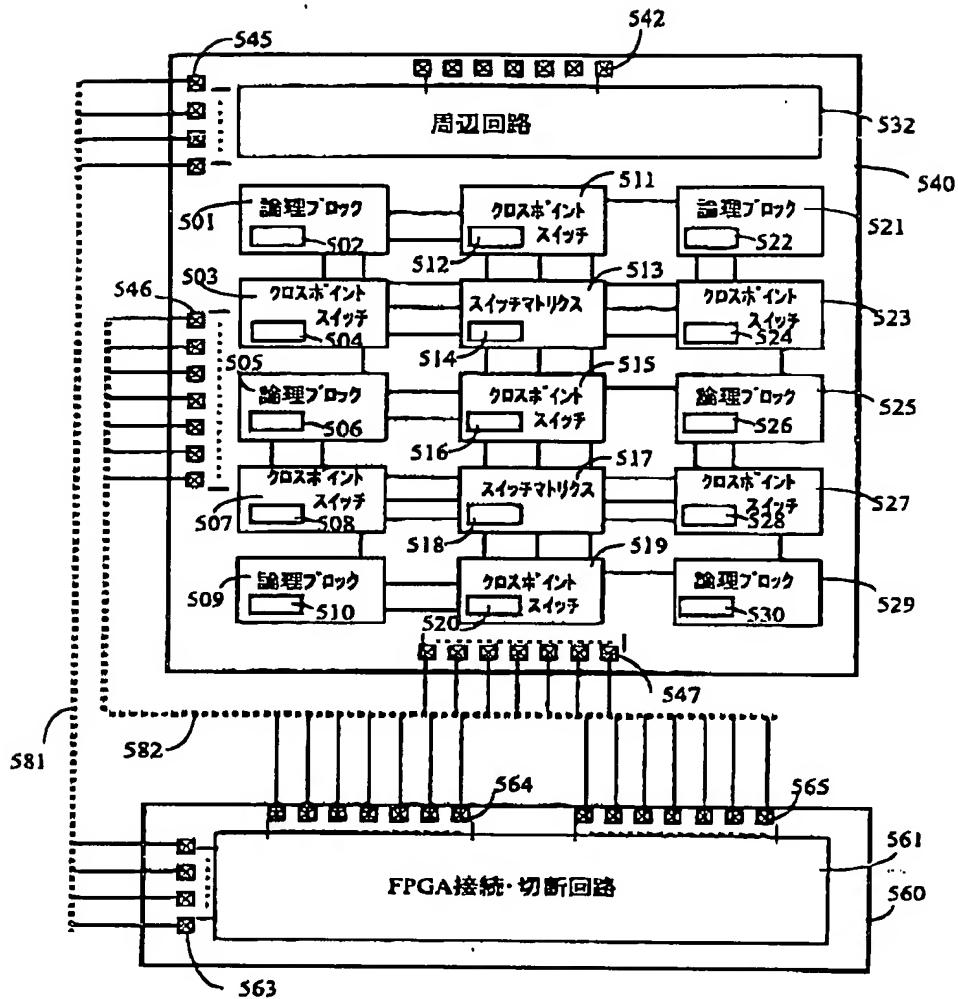


Fig. 18



S01, S05, S09, S21, S25, S29: LOGIC BLOCK

S02, S06, S10, S22, S26, S30: LOGIC BLOCK SETTING MEMORY

S03, S04, S11, S15, S19, S23, S27: CROSS POINT SWITCH

S08, S12, S16, S20, S24, S28: CROSS POINT SWITCH SETTING MEMORY

S13, S17: SWITCH MATRIX

S14, S18: SWITCH MATRIX SETTING MEMORY

S32: PERIPHERAL CIRCUITS

S40: DEVICE (FIRST DEVICE) THAT DOES NOT HAVE
CONNECTING/DISCONNECTING FUNCTION AND WHOSE CIRCUIT
CONFIGURATION IS DETERMINED BY CONNECTING AND DISCONNECTING
REDUNDANT WIRING ELECTRICALLY

S42: CONTROL TERMINAL OF FIRST DEVICE

S45: CONNECTION/DISCONNECTION CONTROL TERMINAL

S46, S47: CONNECTION/DISCONNECTION SIGNAL TERMINAL

S60: FIRST DEVICE (FPGA) CONNECTING/DISCONNECTING DEVICE (SECOND
DEVICE)

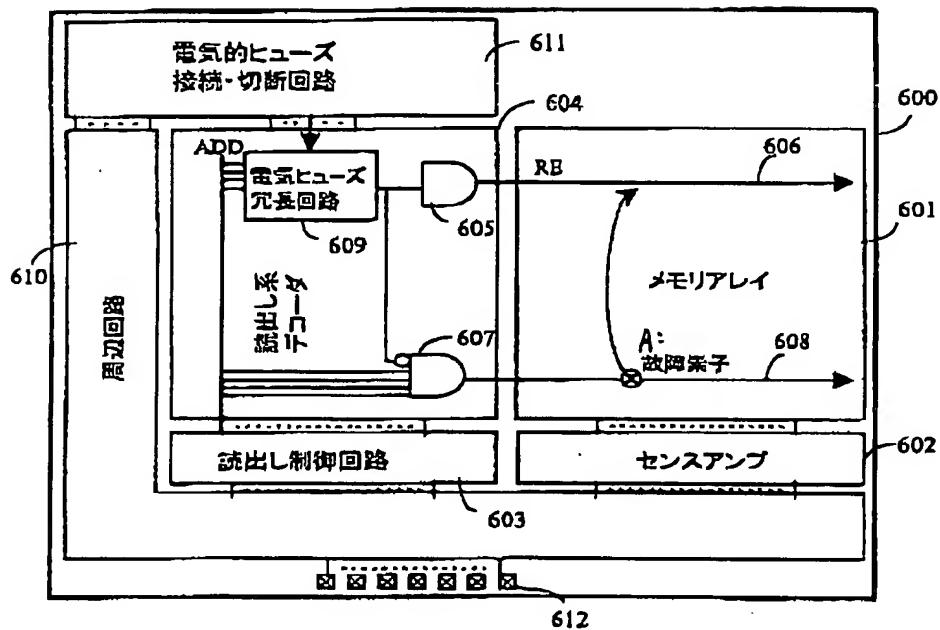
S61: FIRST DEVICE CONNECTING/DISCONNECTING CIR.

S63: CONNECTION/DISCONNECTION CONTROL TERMINAL

S64, S65: CONNECTION/DISCONNECTION SIGNAL TERMINAL

S81: CONNECTION/DISCONNECTION CONTROL CONNECTION LINE
(CONNECTED ONLY WHEN CONNECTIONS AND DISCONNECTIONS ARE MADE)S82: CONNECTION/DISCONNECTION SIGNAL CONNECTION LINE (CONNECTED
ONLY WHEN CONNECTIONS AND DISCONNECTIONS ARE MADE)

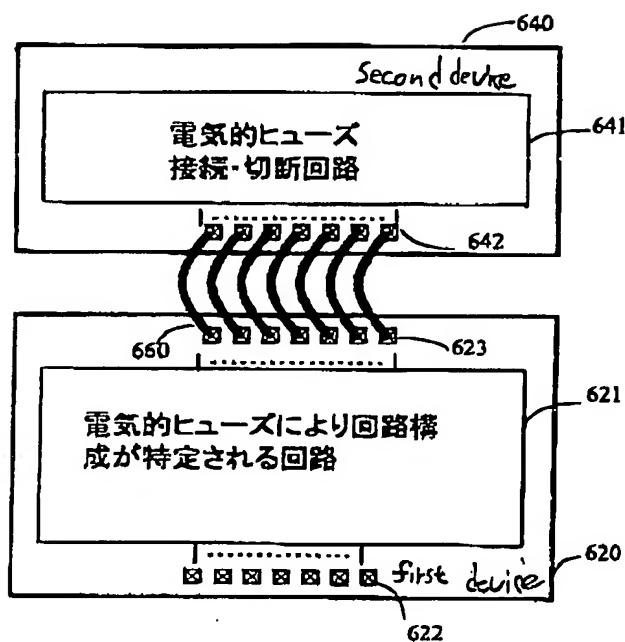
Fig. 19



A: FAULTY ELEMENT

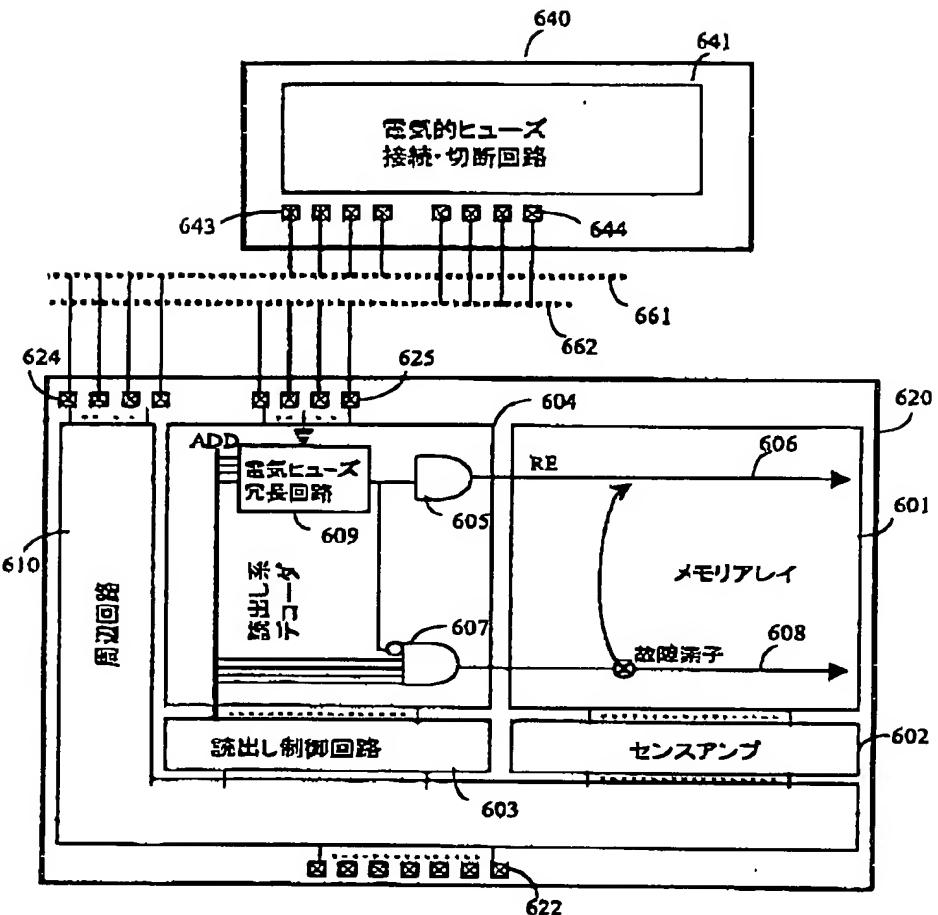
600: CIRCUIT WHOSE CIRCUIT CONFIGURATION IS DETERMINED BY ELECTRIC FUSES
601: MEMORY ARRAY
602: SENSE AMPLIFIER CIR.
603: READING CONTROL CIR.
604: READING DECODER
605: REDUNDANT DECODER
606: REDUNDANT WORD LINE
607: DECODER
608: WORD LINE
609: ELECTRIC FUSE REDUNDANT CIR.
610: PERIPHERAL CIRCUITS
611: ELECTRIC FUSE CONNECTING/DISCONNECTING CIR.
612: CONTROL TERMINAL OF SEMICONDUCTOR DEVICE

Fig.20



620: DEVICE (FIRST DEVICE) THAT DOES NOT HAVE CONNECTING/DISCONNECTING FUNCTION AND WHOSE CIRCUIT CONFIGURATION IS DETERMINED BY ELECTRIC FUSES
621: CIRCUIT WHOSE CIRCUIT CONFIGURATION IS DETERMINED BY ELECTRIC FUSES
622: CONTROL TERMINAL OF FIRST DEVICE
623: CONNECTION/DISCONNECTION CONTROL TERMINAL
640: FIRST DEVICE CONNECTING/DISCONNECTING DEVICE (SECOND DEVICE)
641: FIRST DEVICE CONNECTING/DISCONNECTING CIR.
642: CONNECTION/DISCONNECTION CONTROL TERMINAL
660: CONNECTION/DISCONNECTION CONTROL CONNECTION LINE (CONNECTED ONLY WHEN CONNECTIONS AND DISCONNECTIONS ARE MADE)

Fig.2



608: WORD LINE

A: FAULTY ELEMENT

609: ELECTRIC FUSE REDUNDANT CIR.

610: PERIPHERAL CIRCUITS

620: DEVICE (FIRST DEVICE) THAT DOES NOT HAVE CONNECTING/DISCONNECTING FUNCTION AND WHOSE CIRCUIT CONFIGURATION IS DETERMINED BY ELECTRIC FUSES

622: CONTROL TERMINAL OF FIRST DEVICE

624: CONNECTION/DISCONNECTION CONTROL TERMINAL

625: CONNECTION/DISCONNECTION SIGNAL TERMINAL

626: CONNECTION/DISCONNECTION SIGNAL CONNECTION LINE

607: DECODER

604: READING DECODER

603: READING CONTROL CIR.

605: REDUNDANT DECODER

606: REDUNDANT WORD LINE

606: REDUNDANT WORD LINE

608: WORD LINE

608: WORD LINE

640: DEVICE FOR CONNECTING AND DISCONNECTING ELECTRIC FUSES OF FIRST DEVICE

640: DEVICE (SECOND DEVICE) FOR CONNECTING AND DISCONNECTING ELECTRIC FUSES OF FIRST DEVICE

641: DEVICE FOR CONNECTING AND DISCONNECTING ELECTRIC FUSES OF FIRST DEVICE

641: DEVICE FOR CONNECTING AND DISCONNECTING ELECTRIC FUSES OF FIRST DEVICE

643: CONNECTION/DISCONNECTION CONTROL TERMINAL

643: CONNECTION/DISCONNECTION CONTROL TERMINAL

644: CONNECTION/DISCONNECTION SIGNAL TERMINAL

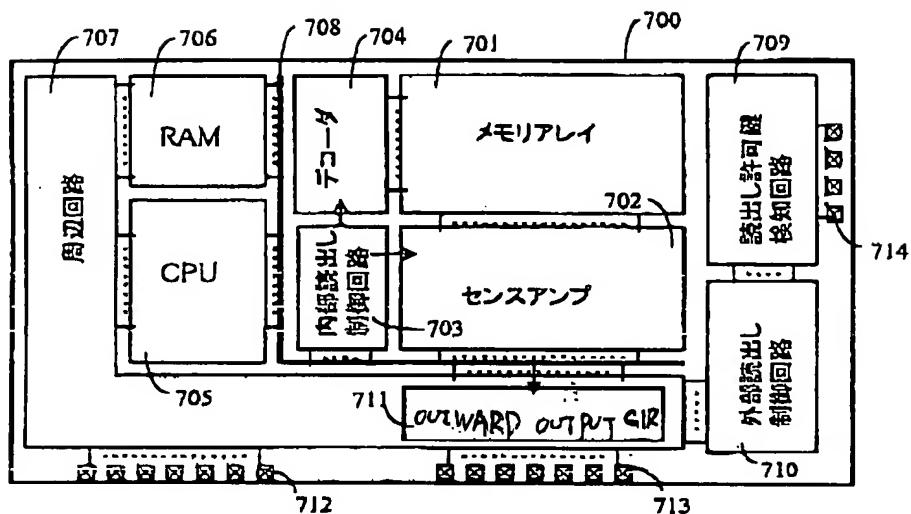
644: CONNECTION/DISCONNECTION SIGNAL TERMINAL

661: CONNECTION/DISCONNECTION CONTROL CONNECTION LINE (CONNECTED ONLY WHEN CONNECTIONS AND DISCONNECTIONS ARE MADE)

662: CONNECTION/DISCONNECTION SIGNAL CONNECTION LINE (CONNECTED ONLY WHEN CONNECTIONS AND DISCONNECTIONS ARE MADE)

662: CONNECTION/DISCONNECTION SIGNAL CONNECTION LINE (CONNECTED ONLY WHEN CONNECTIONS AND DISCONNECTIONS ARE MADE)

Fig.22



700: MICROCOMPUTER

701: MEMORY ARRAY

702: SENSE AMPLIFIER CIR.

703: MICROCOMPUTER INTERNAL READING CONTROL CIR.

704: READING DECODER

707: PERIPHERAL CIRCUITS

708: CONTROL BUS

709: READING PERMISSION KEY DETECTION CIR.

710: OUTWARD READING CONTROL CIR.

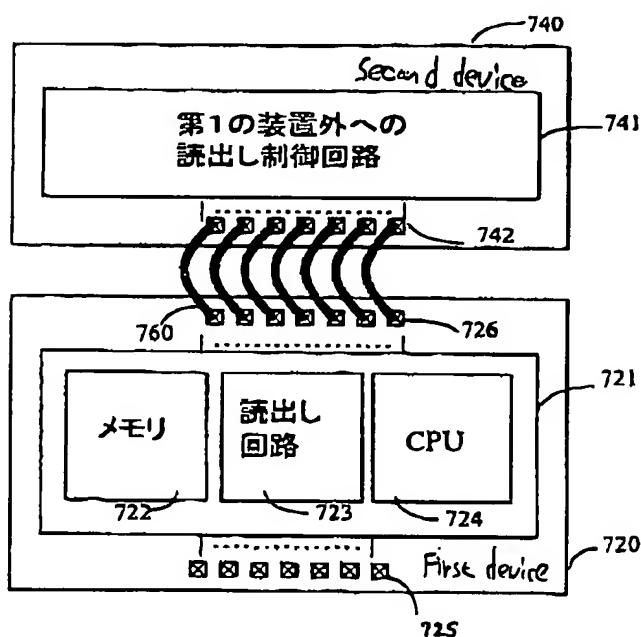
711: OUT-OF-MICROCOMPUTER OUTPUT CIR.

712: MICROCOMPUTER CONTROL TERMINAL

713: MEMORY DATA OUTPUT TERMINAL

714: READING PERMISSION KEY INPUT TERMINAL

Fig.23



720: MICROCOMPUTER (FIRST DEVICE) NOT HAVING OUT-OF-CHIP MEMORY DATA READING FUNCTION

721: CIRCUIT CAPABLE OF READING MEMORY DATA ONLY INSIDE CHIP
722: MEMORY

723: MICROCOMPUTER INTERNAL READING CIR.

725: CONTROL TERMINAL OF FIRST DEVICE

726: OUTWARD READING CONTROL TERMINAL

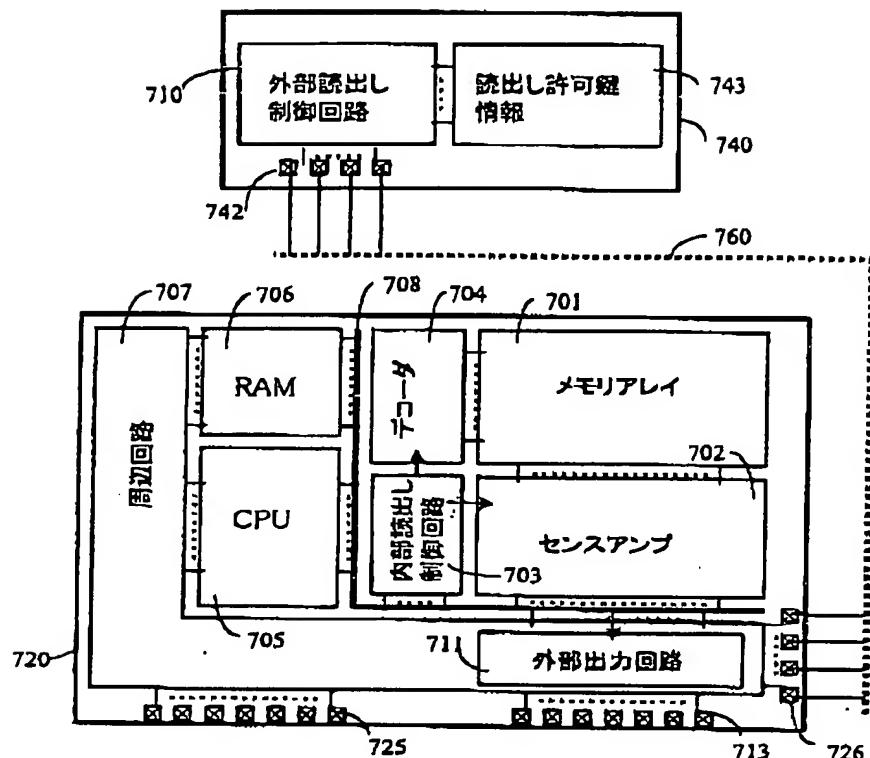
740: OUT-OF-FIRST-DEVICE READING CONTROL DEVICE (SECOND DEVICE)

741: OUT-OF-FIRST-DEVICE READING CONTROL CIR.

742: OUTWARD READING CONTROL TERMINAL

760: OUTWARD READING CONTROL CONNECTION LINE (CONNECTED ONLY AT THE TIME OF OUT-OF-CHIP READING)

Fig.24



701: MEMORY ARRAY

702: SENSE AMPLIFIER CIR.

703: MICROCOMPUTER INTERNAL READING CONTROL CIR.

704: READING DECODER

707: PERIPHERAL CIRCUITS

708: CONTROL BUS

710: OUTWARD READING CONTROL CIR.

711: OUT-OF-MICROCOMPUTER OUTPUT CIR.

713: MEMORY DATA OUTPUT TERMINAL

720: MICROCOMPUTER (FIRST DEVICE) NOT HAVING OUT-OF-DEVICE MEMORY
DATA READING FUNCTION

725: CONTROL TERMINAL OF FIRST DEVICE

726: OUTWARD READING CONTROL TERMINAL

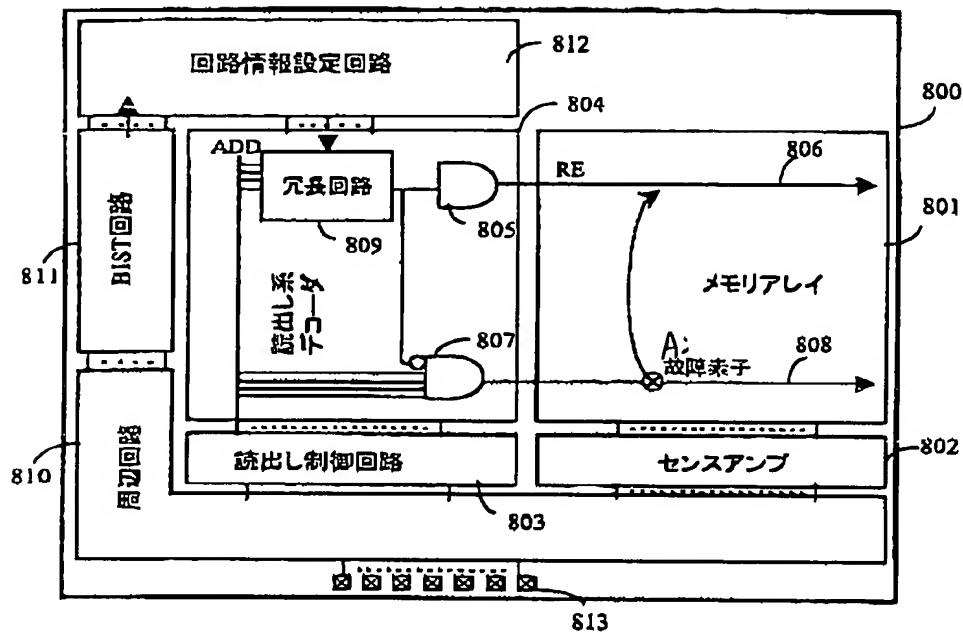
740: OUT-OF-FIRST-DEVICE READING CONTROL DEVICE (SECOND DEVICE)

742: OUTWARD READING CONTROL TERMINAL

743: OUT-OF-FIRST-DEVICE READING PERMISSION KEY INFORMATION

760: OUTWARD READING CONTROL CONNECTION LINE (CONNECTED ONLY AT
THE TIME OF OUT-OF-DEVICE READING)

Fig. 25



A: FAULTY ELEMENT

800: CIRCUIT IN WHICH CIRCUIT INFORMATION CAN BE SET ON THE BASIS OF BIST (BUILT-IN SELF-TEST) RESULTS

801: MEMORY ARRAY

802: SENSE AMPLIFIER CIR.

803: READING CONTROL CIR.

804: READING DECODER

805: REDUNDANT DECODER

806: REDUNDANT WORD LINE

807: DECODER

808: WORD LINE

809: REDUNDANT CIR.

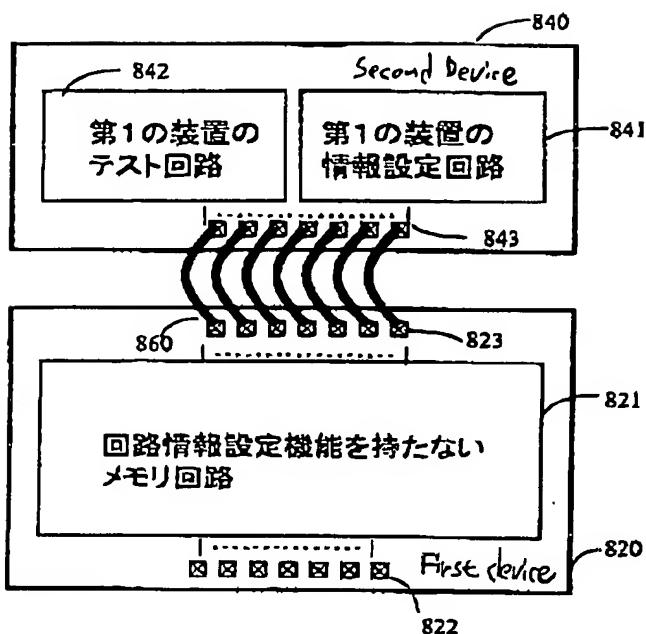
810: PERIPHERAL CIRCUITS

811: BIST (BUILT-IN SELF-TEST) CIR.

812: CIRCUIT INFORMATION SETTING CIR.

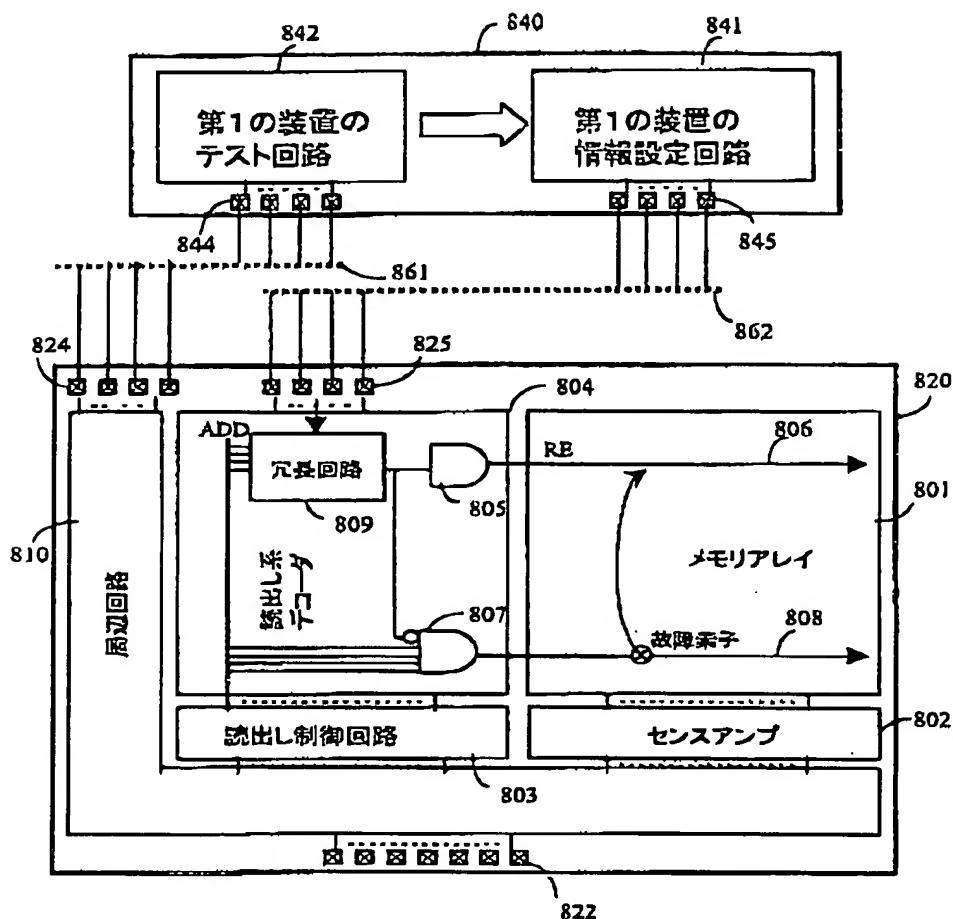
813: SEMICONDUCTOR DEVICE CONTROL TERMINAL

Fig. 26



- 820: DEVICE NOT HAVING CIRCUIT INFORMATION SETTING FUNCTION (FIRST DEVICE)
- 821: CIRCUIT WHOSE CIRCUIT CONFIGURATION IS DETERMINED BY ELECTRICAL INFORMATION
- 822: CONTROL TERMINAL OF FIRST DEVICE
- 823: CIRCUIT INFORMATION SETTING TERMINAL
- 840: TESTING AND INFORMATION SETTING DEVICE (SECOND DEVICE) FOR FIRST DEVICE
- 841: INFORMATION SETTING CIR. FOR FIRST DEVICE
- 842: TESTING CIR. FOR FIRST DEVICE
- 843: CIRCUIT INFORMATION SETTING TERMINAL
- 860: INFORMATION SETTING SIGNAL CONNECTION LINE (CONNECTED ONLY AT THE TIME OF INFORMATION SETTING)

Fig.27



801: MEMORY ARRAY
 802: SENSE AMPLIFIER CIR.
 803: READING CONTROL CIR.
 804: READING DECODER
 805: REDUNDANT DECODER
 806: REDUNDANT WORD LINE
 807: DECODER
 808: WORD LINE
 809: REDUNDANT CIR.
 810: PERIPHERAL CIRCUITS

820: DEVICE NOT HAVING CIRCUIT INFORMATION SETTING FUNCTION (FIRST DEVICE)
 822: CONTROL TERMINAL OF FIRST DEVICE
 824: TESTING AND CIRCUIT INFORMATION SETTING CONTROL TERMINAL
 825: CIRCUIT INFORMATION SETTING TERMINAL
 840: TESTING AND INFORMATION SETTING DEVICE (SECOND DEVICE) FOR FIRST DEVICE
 841: INFORMATION SETTING CIR. FOR FIRST DEVICE
 842: TESTING CIR. FOR FIRST DEVICE
 844: TESTING AND CIRCUIT INFORMATION SETTING CONTROL TERMINAL
 845: CIRCUIT INFORMATION SETTING TERMINAL
 861: INFORMATION SETTING CONTROL CONNECTION LINE (CONNECTED ONLY AT THE TIME OF INFORMATION SETTING)
 862: INFORMATION SETTING SIGNAL CONNECTION LINE (CONNECTED ONLY AT THE TIME OF INFORMATION SETTING)